

THREE NEW SPECIES OF *HYDROPORUS* (COLEOPTERA:
DYTISCIDAE) FROM THE SOUTHEASTERN UNITED STATES

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Abstract.—Three new species of *Hydroporus*, *jenniferae*, *jeanneae*, and *folkertsi*, are described from Tennessee and Alabama. All three species are placed in the *pulcher* group of *Hydroporus*.

During the past three years, extensive collecting in Tennessee has revealed two new species of *Hydroporus*, which are rather common and widespread in central Tennessee. A third species, generously provided by Dr. G. W. Folkerts, is known only from the type-locality in Jefferson Co., Alabama. All three species are placed in the *pulcher* group of *Hydroporus* based on their narrow form, prosternal setae (in two of the species), and apically bifid aedeagus. The importance of the apically bifid aedeagus in characterizing species of the *pulcher* group has previously been pointed out by Leech (1949). Fall (1923) keyed and discussed all previously described species in the *pulcher* group, except *H. laetus* which was described by Leech in 1949.

Hydroporus jenniferae Wolfe and Matta, NEW SPECIES

Diagnosis.—*Hydroporus jenniferae* is most closely related to *Hydroporus ohionis* and will key to that species in Fall's (1923) revision. It is easily distinguished from *H. ohionis* by its larger average size and paler more yellowish head. In addition the tip of the aedeagus of *H. jenniferae* is much more hook shaped than in *H. ohionis*.

Description of holotype.—♂, length 3.3 mm, width 1.7 mm, L/W 1.94. Form elongate evenly oval, with pronotum and elytra in continuous outline, widest at middle. Lateral margins of pronotum evenly rounded toward anterior angles, lateral bead distinct, at maximum width about equal to width of the 4th antennal segment. Prosternal setae evident but somewhat sparse. Prosternal prominence evidently angulate but not distinctly protuberant; prosternal file present; prosternal process broadened, narrowly lanceolate

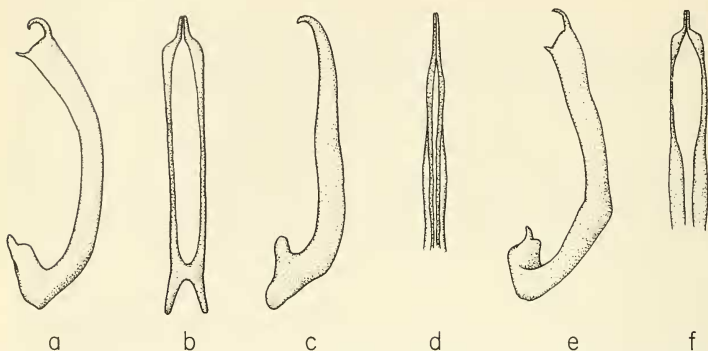


Fig. 1. Aedeagus of: *Hydroporus jenniferae*, a) side b) dorsal; *H. jeanneae* c) side d) dorsal; *H. folkertsi* e) side f) dorsal.

posterior to anterior coxae; with median area rounded, lateral margins taper toward bluntly rounded apex.

Not strongly shining dorsally. Head pale yellow, vaguely infuscate at occiput, antenna pale yellow with 11th segment infuscate. Pronotum with an even broad black band along entire anterior margin. Posterior margin of pronotum with a black band of variable width, narrower on each side, expanding medially in undulating fashion and coalescing with anterior band at areas of maximum width. Paler isolated discal areas of pronotum reddish yellow. Elytra with 2 rather broad undulating narrowly connected blackish-brown fascia, the anterior fascia at middle of elytra, the 2nd in posterior $\frac{1}{3}$. Dark sutural stripe extending from apex to base then extending about $\frac{1}{2}$ width of elytral base. Ventral surface primarily reddish yellow with mesosternum, lateral edges of metaepisternum, metacoxae, and abdominal sterna slightly infuscate.

Dorsal surface with perceptible reticulate microsculpture. Punctuation of head sparse and fine. Pronotum with line of coarser and denser punctures posterior and adjacent to anterior margin, discally punctures sparser and finer; along posterior pronotal areas punctures coarser, these being restricted to posterior infuscation. Elytral punctuation fine and sparse, coarsest discally and finer laterally and apically, a very poorly defined longitudinal series of denser punctures is discernible in discal area of each elytron. Ventrally metacoxae rather coarsely punctate, metasternum even more so, medial punctures finer on both metacoxae and metasternum. Abdominal punctures fine, except on sterna 1 and 2 which are coarser.

Pro- and mesotarsi relatively short and broad, articles 1 and 2 with small

palettes, anterior protarsal claw modified, more strongly curved at base and slightly sinuate on inside, posterior claw modified but less so than anterior claw. Aedeagus apically bifid and shaped as in Fig. 1a, b.

Allotype.—♀, length 3.6 mm, width 1.8 mm, L/W 2.00. Similar to male but slightly longer and broader, pro- and mesotarsi less dilated, anterior protarsal claw not modified, evenly curved and tapered. Abdominal sterna more infuscate.

Variation.—Males ($n = 20$); $\bar{L} = 3.3$ mm (3.4–3.0), $\bar{W} = 1.6$ mm (1.7–1.4), $\bar{L}/\bar{W} = 2.06$. Females ($n = 23$); $\bar{L} = 3.4$ mm (3.7–3.1), $\bar{W} = 1.7$ mm (1.7–1.6), $\bar{L}/\bar{W} = 2.00$. Anterior and posterior pronotal bands vary from narrowly connected to broadly separated. Some specimens have elytral fascia so reduced that they are separated from each other and the sutural stripe. Females are more alutaceous and are generally more infuscate ventrally. The ventral infuscation varies from practically none to almost completely darkened sterna.

Habitat.—So far known only from central Tennessee, its presence in central Kentucky is likely. The large type-series is from a small stream (8 to 10 feet wide) with expansive slabs of bedrock. The beetles were found, among leaves and filamentous algae, in fissures and depressions in the bedrock which contained one to several inches of water. *Hydroporus jenniferae* was also taken from small and medium sized intermittent streams with gravel or gravel and sand substrates, usually among leaves and/or algae.

Etymology.—This species is named for the senior author's daughter, Jennifer, who has accompanied him on many field trips and has assisted in many of the collections.

Type-data.—Holotype and allotype: TENNESSEE: Trousdale Co., Rocky Cr. approximately 1 mi N Barthelia on Hwy. 231-10, 20 June 77, G. W. Wolfe and Jennifer and Jeanne Wolfe. Paratypes: Same locality data; 164 specimens. Lincoln Co., Cane Cr. at Old Fishing Ford Bridge, 0.8 mi from Hwy. 431, 7 May 77, 2 specimens, G. W. Wolfe and J. Louton. Spring Cr. off county road 4281 approximately 1 mi N Blakeville, 5 May 77, 10 specimens, G. W. Wolfe, G. S. Schuster, B. Wunderlin. Marshall Co., Tributary to East Fork Globe Cr. 2 mi E jct. I-65 and Hwy. 50A, 25 July 76, 35 specimens, G. W. Wolfe and J. L. Louton. Spring Creek at county road 4278 ridge just off Hwy. 99, 25 July 76, 14 specimens, G. W. Wolfe and J. L. Louton. Dekalb Co., Dry Cr. 7 air mi W of Smithville, 13 Sept. 77, 9 specimens, G. W. Wolfe, B. H. Bauer, and D. Nieland. Maury Co., Flat Cr. at Hwy. 99, 22 June 77, 7 specimens, G. W. Wolfe. Sumner Co., Dry Fork Cr. at Hwy. 31 E, 3 Aug 77, 8 specimens, G. W. Wolfe. Williamson Co., Rutherford Cr. at Hwy. 431-10, 22 June 77, 10 specimens, G. W. Wolfe.

Deposition of type-material.—The holotype and allotype are deposited in the United States National Museum of Natural History (NMNH) Type no. 75498. Also deposited in the NMNH are one male and one female paratype

from Trousdale Co., Tenn. One male and one female paratype from the type-locality (Trousdale Co.) have been deposited with each of the following: Snow Museum, University of Kansas; Michigan State University; California Academy of Sciences (San Francisco); Dr. W. L. Hilsenhoff, University of Wisconsin; Dr. W. U. Brigham, Illinois Natural History Survey; Dr. J. R. Zimmerman, New Mexico State University; Dr. F. N. Young, University of Indiana; Mr. R. E. Roughly, University of Alberta; Dr. G. W. Folkerts, Auburn University; Hugh B. Leech, Angwin, California; Fredrico Angelini, Francavilla Fontana, Italy. The 35 paratypes from Marshall Co. are deposited with Dr. J. F. Matta, Old Dominion University. All other type-material is deposited with the senior author.

Hydroporus jeanneae Wolfe and Matta, NEW SPECIES

Diagnosis.—*Hydroporus jeanneae* keys to *Hydroporus oppositus* in Fall (1923). It may be separated from *H. oppositus*, and all other species of the *pulcher* group, by its unique dorsal color pattern which consists of a pale yellowish fascia in the basal one third and apical one fifth of the elytra and a single larger dark brownish fascia in the posterior two thirds. It might be confused with the darker forms of *H. oppositus* which are sometimes almost completely infuscated dorsally (especially specimens from the northeastern United States); however, in these specimens the dark fascia is more reddish and almost covers the entire dorsal surface of the elytra.

Description of holotype.—Length 3.4 mm, width 1.7 mm, L/W 2.00. Form as in *H. jenniferae*. Lateral bead of pronotum distinct and approximately $\frac{4}{5}$ as wide as 4th antennal segment. Prosternal setae distinct and dense. Prosternal prominence distinctly angulate and more acutely produced than in *H. jenniferae*. Prosternal process essentially as in *H. jenniferae*.

Not strongly shining dorsally. Head light brownish yellow and vaguely infuscate on each side of head between eyes and at occiput. Antennae light reddish yellow with 11th segment infuscate. Pronotum entirely dark reddish brown, slightly darker anteriorly. Elytra with 1 large dark fascia in posterior $\frac{2}{3}$, pale yellow band across basal $\frac{1}{3}$ and at apical $\frac{1}{5}$, restricted pale circular areas are also evident in lateral areas of dark discal fascia. Dark brownish sutural stripe extending from apex to base of elytra then laterally along $\frac{2}{3}$ basal width, expanding at middle of base. Ventral surface orangish.

Dorsal surface with perceptible reticulate micro-sculpture. Punctuation on head sparse and fine. Pronotal punctuation finer discally, elytral punctuation slightly coarser than in *H. jenniferae* and vague discal longitudinal series of denser punctures evident; ventral punctuation as in *H. jenniferae* but slightly finer and denser.

Protarsi as in *H. jenniferae*. Anterior protarsal claw rather strongly modified; strongly bent at base, thickened and distinctly sinuate internally. Pos-

terior protarsal claw less distinctly modified than anterior claw. Aedeagus distinct, apically bifid and deeply cleft (Fig. 1c, d).

Allotype.—♀, length 3.3 mm, width 1.7 mm, L/W 1.90. Similar to male but slightly more alutaceous. Anterior tarsi narrower and anterior claw evenly curved and tapering. Abdominal sterna more infusate.

Variation.—Males ($n = 11$), $\bar{L} = 3.3$ mm (3.4–3.1), $\bar{W} = 1.7$ mm (1.7–1.6), $\bar{L}/\bar{W} = 1.90$. Females ($n = 12$), $\bar{L} = 3.4$ mm (3.5–3.3), $\bar{W} = 1.7$ mm (1.8–1.7), $\bar{L}/\bar{W} = 2.00$. The large discal dark fascia is of variable size, sometimes isolated from lateral and basal areas of elytra. At maximum extent it reaches the lateral edges and is connected to the dark basal area by a narrow dark stripe on each elytron. The ventral color varies from orangish to reddish brown.

Habitat.—The same as for *H. jenniferae*, however, this species is usually found in fewer numbers.

Etymology.—This species is named after the senior author's wife, Jeanne, who has encouraged and assisted him continuously during his studies.

Type-data.—Holotype and allotype: TENNESSEE: Trousdale Co. same locality as for *H. jenniferae*. Paratypes: Trousdale Co. same locality data, 21 specimens. Sumner Co. same data as for *H. jenniferae*, 3 specimens. Dekalb Co., stream at base of cliff at Hwy. 141 by Center Hill Dam, 26 June 77, 1 specimen, G. W. Wolfe and J. Louton. Marshall Co., Spring Cr. at county road 4278 bridge just off Hwy. 99, 25 July 1976, 1 specimen, G. W. Wolfe and J. L. Louton. Tributary to east fork of Globe Creek, 2 mi E of Junction I-65 and Hwy. 50A, 25 July 76, 2 specimens, G. W. Wolfe and J. L. Louton.

Deposition of type-material.—The holotype and allotype are deposited in the United States National Museum of Natural History (NMNH) as Type no. 75499. Also deposited in the NMNH are one male and one female paratype from the type-locality. One male and one female paratype from the type-locality are deposited with each of the following: Dr. G. W. Folkerts, Auburn University; Dr. F. N. Young, University of Indiana; Hugh B. Leech, Angwin, California; Dr. J. R. Zimmerman, New Mexico State University; California Academy of Sciences (San Francisco); Dr. J. F. Matta, Old Dominion University. All other type-material is retained by the senior author.

Hydroporus folkertsi Wolfe and Matta, NEW SPECIES

Diagnosis.—This species keys to couplet 7 in Fall (1923) but does not fit any of the alternatives given at the couplet. It may be separated from *H. pulcher*, *H. cocheconis* and *H. laetus* by its coarser dorsal punctation. In addition the pronotum is infusate along the anterior and posterior edges and is yellow discally and laterally. *Hydroporus laetus* has the pronotum

uniformly reddish brown while both *pulcher* and *cocheconis* have the posterior infuscation reduced.

Description of holotype.—♂, length 3.1 mm, width 1.5 mm, L/W 2.07. Body quite elongate oval, widest at middle, lateral edges of elytra nearly parallel in basal $\frac{1}{3}$. Lateral edges of pronotum evenly rounded toward anterior angles, lateral bead distinct and slightly broader than 4th antennal segment. Prosternal setae are absent. Prosternal prominence angulate but reduced, more so than with previous 2 species, prosternal file present. Prosternal process as in previous 2 species.

Rather strongly shining dorsally. Head entirely pale yellow. Antennae pale yellow with segments 8 to 11 becoming gradually infuscate. Pronotum with evenly broad brownish infuscation along anterior margin, posterior infuscation restricted to middle $\frac{1}{3}$ with anterior edge undulating, discal and lateral areas pale yellow. Elytra with 2 unconnected irregular fascia, the anterior fascia 2× as broad as the posterior one. Sutural stripe extending from apex to base then along $\frac{1}{3}$ the width of base. Ventral surface entirely yellowish.

Dorsal surface with perceptible reticulate microsculpture which is less evident on elytra. Punctuation of head sparse and fine, denser in occipital area. Pronotum with narrow area of finer denser punctures just posterior to and parallel to anterior edge, discal punctures slightly coarser. Coarsest punctures along posterior edge in posterior infuscation. Elytra with rather coarse and sparse punctures, somewhat less coarse laterally and apically; a vague longitudinal series of finer punctures evident in discal area and adjacent to suture. Ventrally metacoxae coarsely and somewhat sparsely punctate, more so than previous species. Metasternal punctures coarser, finer medially. Abdominal sterna finely punctate except sterna 1 and 2.

Male pro- and mesotarsi not distinctly expanded, but with palettes. Anterior protarsal claw slightly thickened and more strongly bent at base. Aedeagus apically bifid and distinctive (Fig. 1e, f).

Allotype.—♀, length 3.3 mm, width 1.5, L/W 2.09. Almost identical to male, not duller. Protarsi slightly less broad, claws evenly curved and tapering.

Variation.—Males ($n = 4$), $\bar{L} = 3.1$ mm, (3.2–3.1), $\bar{W} = 1.4$ mm (1.5–1.4), $\bar{L}/\bar{W} = 2.21$. Females ($n = 3$), $\bar{L} = 3.3$ mm, (3.4–3.0), $\bar{W} = 1.6$ mm (1.7–1.5), $\bar{L}/\bar{W} = 2.08$. The small series available is very constant in most characters. In some specimens the posterior fascia is somewhat reduced, even being separated from the sutural stripe. At maximum size this fascia may be scarcely connected to the more anterior fascia. The light areas of the pronotum vary from pale yellow to orangish.

Habitat.—The type-locality is a small woodland stream (3 to 8 feet wide) with gravel-rock-rubble bottom. All specimens were taken along margins in overhanging grass and among leaves.

Etymology.—This species is named in honor of Dr. George W. Folkerts who called our attention to this species.

Type-data.—Holotype and allotype: ALABAMA, Jefferson Co., woodland stream 1.5 mi N of Praco on county road 81, 18 December 77, Jeanne, Jennifer and G. W. Wolfe. Paratypes: Same locality data, 5 specimens. Same locality 31 January 70, 4 specimens, G. W. Folkerts.

Deposition of type-material.—The holotype and allotype are deposited in the United States National Museum of Natural History (NMNH) as Type no. 75500. One male and one female paratype are also in the collection of each of the authors and all other specimens are deposited with Dr. G. W. Folkerts, Auburn University.

ACKNOWLEDGMENTS

We are especially grateful to Dr. G. W. Folkerts who called our attention to the previously undescribed species (*H. folkertsi*) from Jefferson Co., Alabama. Dr. F. N. Young has generously provided specimens of the *pulcher* group from his collection, which included representatives of *H. jeanneae* and *H. jenniferae*. We thank Dr. G. S. Schuster, Mr. J. A. Louton, and Ms. Belinda Wunderlin for their assistance on several extended field trips. Dr. P. J. Spangler was especially helpful in reviewing the manuscript.

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